

CLAIMS

1. An adipose tissue derived cell for use as a feeder cell.
2. The cell according to claim 1 wherein the feeder cell
5 is for differentiating or maintaining an embryonic stem cell, a tissue stem cell or a differentiated cell.
3. The cell according to claim 1 wherein the feeder cell is for effecting differentiation to or maintenance of epidermis.
- 10 4. The cell according to claim 1 wherein the feeder cell is for effecting differentiation to or maintenance of cornea.
5. The cell according to claim 1 wherein the cell comprises a tissue stem cell.
- 15 6. The cell according to claim 1 wherein the cell comprises a fibroblast.
7. The cell according to claim 1 wherein the cell comprises a primary cultured cells.
8. The cell according to claim 1 wherein the cell
20 comprises a human cell.
9. A method for preparing a transplant for regenerating an organ, tissue or cell of a subject, comprising the steps of:
 - A) providing part of a desired organ, tissue or cell or a
25 stem cell capable of differentiation thereinto; and
 - B) culturing the part or the stem cell on a feeder cell comprising an adipose tissue derived cell.
10. The method according to claim 9 wherein the desired

organ, tissue or cell comprises an epidermic one.

11. The method according to claim 9 wherein the desired organ, tissue or cell is selected from the group consisting of cornea, bone, muscle, cartilage, heart, pericardium, 5 blood vessel, skin, kidney, liver, umbilical cord, intestine, nerve, lung, placenta, pancreas, brain, joint, limb peripheries, fat, retina, and parts thereof.
12. The method according to claim 9 wherein the feeder cell comprises a tissue stem cell.
- 10 13. The method according to claim 9 wherein the feeder cell comprises a fibroblast.
14. The method according to claim 9 wherein the feeder cell comprises a primary cultured cells.
15. The method according to claim 9 wherein the subject and the feeder cell are derived from the same species.
16. The method according to claim 9 wherein the subject is human and the feeder cell is a human cell.
17. The method according to claim 9 wherein the culturing is performed *ex vivo*.
- 20 18. The method according to claim 9 wherein the part or the stem cell and the feeder cell are xenogeneic, allogeneic or syngeneic.
19. The method according to claim 9 wherein the part or the stem cell and the feeder cell are syngeneic.
- 25 20. The method according to claim 9 wherein the part or the stem cell is either what has been just excised from the subject or what has been stored frozen.
21. The method according to claim 9 wherein the culturing

is performed in the presence of at least one factor selected from the group consisting of fetal calf serum, insulin or cholera toxin.

22. The method according to claim 9 wherein the culturing 5 is performed at the ratio of the part or the stem cell to the feeder cell between the range of 10:1 to 1:10.

23. The method according to claim 9 wherein the culturing is performed using the feeder cell in a smaller amount than the part or the stem cell.

10 24. The method according to claim 9 wherein the culturing is performed in a culture medium containing a cytophysiologically active substance.

25. The method according to claim 9 wherein the culturing is performed in a culture medium containing an epidermal 15 growth factor (EGF) and wherein the desired organ, tissue or cell contains cornea, its tissue or cell.

26. The method according to claim 9 which further includes the step of suppressing the growth of the feeder cell.

20 27. The method according to claim 26 wherein the suppressing of the growth of the feeder cell is achieved by an antibiotic administration or an irradiation.

28. The method according to claim 27 wherein the antibiotic comprises mitomycin C.

25 29. A system for regenerating an organ, tissue or cell of a subject, comprising:

A) a vessel; and

B) a feeder cell comprising an adipose tissue derived cell.

30. The system according to claim 29 which further comprises a providing means for providing part of a desired organ, tissue or cell or a stem capable of differentiation thereinto.

5 31. The system according to claim 30 wherein the providing means includes a means for recovering the part or the stem cell from the subject.

32. The system according to claim 31 wherein the means includes means selected from the group consisting of a 10 catheter, a scraping rod, forceps, a syringe, medical scissors, and an endoscope.

33. The system according to claim 29 which further comprises

a cytophysiologically active substance.

15 34. The system according to claim 29 which further comprises EGF.

35. The system according to claim 29 which further includes means for suppressing the growth of the feeder cell.

20 36. A method for regenerating an organ, tissue or cell of a subject, comprising the steps of:

A) providing part of a desired organ, tissue or cell or a stem cell capable of differentiation thereinto;

B) culturing the part or the stem cell on a feeder cell

25 comprising an adipose tissue derived cell; and

C) transplanting the cultured part or stem cell to a site to be treated of the subject.

37. A method for regenerating an organ, tissue or cell of

a subject, comprising the step of:

A) transplanting part of a desired organ, tissue or cell or a stem cell capable of differentiation thereinto and a feeder cell comprising an adipose tissue derived cell to a 5 site to be treated of the subject.

38. A pharmaceutical composition for regenerating an organ, tissue or cell of a subject, comprising:

A) part of a desired organ, tissue or cell or a stem cell capable of differentiation thereinto and a feeder cell 10 comprising an adipose tissue derived cell.

39. Use of an adipose tissue derived cell as a feeder cell.

40. Use of an adipose tissue derived cell for producing a pharmaceutical composition containing a feeder cell.

15 41. Use of an adipose tissue derived cell for producing a pharmaceutical composition for regenerating an organ, tissue or cell of a subject.

42. A primary cultured human fibroblasts for use as a feeder cell.

20 43. A method for preparing a transplant for regenerating an organ, tissue or cell of a subject, comprising the steps of:

A) providing part of a desired organ, tissue or cell or a stem cell capable of differentiation thereinto; and

25 B) culturing the part or the stem cell on a feeder cell comprising a primary cultured human fibroblasts.

44. A system for regenerating an organ, tissue or cell of a subject, comprising:

A) a vessel; and

B) a feeder cell comprising a primary cultured human fibroblasts.

45. A method for regenerating an organ, tissue or cell of
5 a subject, comprising the steps of:

A) providing part of a desired organ, tissue or cell or a stem cell capable of differentiation thereinto;

B) culturing the part or the stem cell on a feeder cell comprising a primary cultured human fibroblasts; and

10 C) transplanting the cultured part or stem cell to a site to be treated of the subject.

46. A method for regenerating an organ, tissue or cell of a subject, comprising the step of:

A) transplanting part of a desired organ, tissue or cell or
15 a stem cell capable of differentiation thereinto and a feeder cell comprising a primary cultured human fibroblasts to a site to be treated of the subject.

47. A pharmaceutical composition for regenerating an organ, tissue or cell of a subject, comprising:

20 A) part of a desired organ, tissue or cell or a stem cell capable of differentiation thereinto and a feeder cell comprising a primary cultured human fibroblasts.

48. Use of a primary cultured human fibroblasts as a feeder cell.

25 49. Use of a primary cultured human fibroblasts for producing a pharmaceutical composition containing a feeder cell.

50. Use of a primary cultured human fibroblasts for

producing a pharmaceutical composition for regenerating an organ, tissue or cell of a subject.

51. A graft for regenerating an epithelial tissue which contains a stem cell or a cell derived from the stem cell.

5 52. The graft according to claim 51 wherein the epithelial tissue is cornea.

53. The graft according to claim 51 wherein the stem cell is selected from the group consisting of an epithelial stem cell, an embryonic stem cell, a bone marrow mesenchymal 10 stem cell, a hematopoietic stem cell, a vascular endothelial stem cell, a neural stem cell, a retinal stem cell, an adipose stem cell, a renal stem cell and a hepatic stem cell.

54. The graft according to claim 51 wherein the stem cell 15 is an epithelial stem cell.

55. The graft according to claim 51 wherein the stem cell is selected from the group consisting of a corneal epithelial stem cell, an oral mucosal epithelial stem cell, an epidermal stem cell, a bladder epithelial stem cell, a 20 conjunctival epithelial stem cell, a gastric mucosal epithelial stem cell, a small intestine epithelial stem cell, a large intestine epithelial stem cell, a renal epithelial stem cell, a renal tubular epithelial stem cell, a gingival mucosal epithelial stem cell, a hair stem cell, 25 an esophageal epithelial stem cell, a hepatic epithelial stem cell, a pancreatic epithelial stem cell, a mammary gland stem cell, a salivary gland stem cell, a lacrimal gland stem cell, a pulmonary epithelial stem cell, and a

gallbladder epithelial stem cell.

56. The graft according to claim 51 wherein the stem cell or the cell derived from the stem cell has been co-cultured with a feeder cell.

5 57. The graft according to claim 56 wherein a human derived

cell is used as the feeder cell.

58. The graft according to claim 57 wherein the human derived cell comprises an adipose derived cell, an 10 embryonic stem cell or a bone marrow stem cell.

59. The graft according to claim 58 wherein a cell cultured in DMEM+10% FBS in the absence of the feeder cell is used as the embryonic stem cell or bone marrow stem cell.

15 60. The graft according to claim 56 wherein the feeder cell comprises an adipose tissue derived cell.

61. The graft according to claim 56 wherein co-culturing with the feeder cell is performed under conditions that promote cell adhesion.

20 62. The graft according to claim 51 which comprises layered cells.

63. The graft according to claim 51 which is used in non-suture transplantation.

25 64. The graft according to claim 51 which does not contain any xenogeneic component.

65. Use for preparing a pharmaceutical composition as a graft for regenerating an epithelial tissue, the graft containing a stem cell or a cell derived from the stem

cell.

66. The use according to claim 65 wherein the epithelial tissue is cornea.

67. The use according to claim 65 wherein the stem cell 5 is selected from the group consisting of an epithelial stem cell, an embryonic stem cell, a bone marrow mesenchymal stem cell, a hematopoietic stem cell, a vascular endothelial stem cell, a neural stem cell, a retinal stem cell, an adipose stem cell, a renal stem cell and a hepatic 10 stem cell.

68. The use according to claim 65 wherein the stem cell is an epithelial stem cell.

69. The use according to claim 65 wherein the stem cell is selected from the group consisting of a corneal 15 epithelial stem cell, an oral mucosal epithelial stem cell, an epidermal stem cell, a bladder epithelial stem cell, a conjunctival epithelial stem cell, a gastric mucosal epithelial stem cell, a small intestine epithelial stem cell, a large intestine epithelial stem cell, a renal 20 epithelial stem cell, a renal tubular epithelial stem cell, a gingival mucosal epithelial stem cell, a hair stem cell, an esophageal epithelial stem cell, a hepatic epithelial stem cell, a pancreatic epithelial stem cell, a mammary gland stem cell, a salivary gland stem cell, a lacrimal 25 gland stem cell, a pulmonary epithelial stem cell, and a gallbladder epithelial stem cell.

70. The use according to claim 65 wherein the stem cell or the cell derived from the stem cell has been co-cultured

with a feeder cell.